

Western Shasta Resource Conservation District Consolidated Water Use Efficiency 2002 PSP

Proposal

Cow Creek Watershed Piping Feasibility



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PART ONE

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form**

1. Applying for (select one): ☐ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
☒ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Western Shasta Resource Conservation District
3. Project Title: Cow Creek Watershed Piping Feasibility
4. Person authorized to sign and submit proposal:
- | | |
|-----------------|-----------------------------------|
| Name, title | <u>Tom Engstrom, V. P.</u> |
| Mailing address | <u>3294 Bechelli Lane</u> |
| Telephone | <u>Redding, CA 96002</u> |
| | <u>(530) 224-3250</u> |
| Fax. | <u>(530) 224-3253</u> |
| E-mail | <u>wsrccd@westernshastarc.org</u> |
5. Contact person (if different):
- | | |
|------------------|-------------------------------------|
| Name, title. | <u>Mary Schroeder, District</u> |
| Mailing address. | <u>Manager</u> |
| | <u>3294 Bechelli Lane, Redding,</u> |
| Telephone | <u>CA 96002</u> |
| | <u>(530) 224-3250</u> |
| Fax. | <u>(530) 224-3253</u> |
| E-mail | <u>mary@westernshastarc.org</u> |
6. Funds requested (dollar amount): 89,964
7. Applicant funds pledged (dollar amount): N/A
8. Total project costs (dollar amount): 89,964
9. Estimated total quantifiable project benefits (dollar amount): N/A
- Percentage of benefit to be accrued by applicant: N/A
- Percentage of benefit to be accrued by CALFED or others: N/A

Consolidated Water Use Efficiency 2002 PSP

Proposal Part One:

A. Project Information Form (continued)

10. Estimated annual amount of water to be saved (acre-feet):

N/A

Estimated total amount of water to be saved (acre-feet):

N/A

Over ____ years

N/A

Estimated benefits to be realized in terms of water quality, instream flow, other:

Studies will identify ditch efficiencies and potential positive impacts on water quality and instream flows.

11. Duration of project (month/year to month/year):

11/2002 to 12/2003

12. State Assembly District where the project is to be conducted:

2nd

13. State Senate District where the project is to be conducted:

4th

14. Congressional district(s) where the project is to be conducted:

2nd

Shasta

15. County where the project is to be conducted:

N/A

16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources:

17. Type of applicant (select one):

Prop 13 Urban Grants and Prop 13
Agricultural Feasibility Study Grants:

- ☐ (a) city
☐ (b) county
☐ (c) city and county
☐ (d) joint power authority
☒ (e) other political subdivision of the State, including public water district
☐ (f) incorporated mutual water company
☐ (g) investor-owned utility

DWR WUE Projects: the above

entities (a) through (f) or:

- ☐ (h) non-profit organization
- ☐ (i) tribe
- ☐ (j) university
- ☐ (k) state agency
- ☐ (l) federal agency

18. Project focus:

- ☒ (a) agricultural
- ☐ (b) urban

Consolidated Water Use Efficiency 2002 PSP

Proposal Part One:

A. Project Information Form (continued)

19. Project type (select one):
Prop 13 Urban Grant or Prop 13
Agricultural Feasibility Study Grant
capital outlay project related to:

- ☐ (a) implementation of Urban Best Management Practices
- ☒ (b) implementation of Agricultural Efficient Water Management Practices
- ☐ (c) implementation of Quantifiable Objectives (include QO number(s))

- ☐ (d) other (specify)

DWR WUE Project related to:

- ☐ (e) implementation of Urban Best Management Practices
- ☐ (f) implementation of Agricultural Efficient Water Management Practices
- ☐ (g) implementation of Quantifiable Objectives (include QO number(s))
- ☐ (h) innovative projects (initial investigation of new technologies, methodologies, approaches, or institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information programs
- ☐ (k) other (specify)

20. Do the actions in this proposal involve

- ☐ (a) yes

physical changes in land use, or
potential future changes in land use?

☒ (b) no

If yes, the applicant must complete the CALFED
PSP Land Use Checklist found at
http://calfed.water.ca.gov/environmental_documents.html and submit it with the proposal.

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One
B. Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

Original Signed

Signature

Name and title

Date

**Western Shasta Resource Conservation District
Consolidated Water Use Efficiency 2002 PSP**

Proposal

Cow Creek Watershed Piping Feasibility

PART TWO

Project Summary

The project involves conducting feasibility studies for piping six agricultural ditch irrigation systems within the Cow Creek Watershed. The Cow Creek Watershed is located in Shasta County on the eastern side of the Sacramento River downstream from Shasta Lake. A general site location of the watershed is shown on Figure 1.

The ditch systems are located on Little Cow Creek, Oak Run Creek, Clover Creek, Old Cow Creek and South Cow Creek and range in capacities from approximately 2 cfs to 28 cfs and range in length from approximately 1 mile to 7.5 miles. Preliminary estimates indicate that ditch water losses may be over 50%. The creeks are tributary to Cow Creek, which is tributary to the Sacramento River. Inadequate flow was identified as a problem in all five creeks in the Cow Creek Watershed Assessment in December 2001.

The water rights for the ditch systems were adjudicated in the 1920's and late 1960's. The ditches were constructed in the late 1800's and are in roughly the same condition as when they were installed. In addition to the water losses in the ditch, the ditches are subject to blowouts, slides and unstable geologic conditions, which increase sediment loading.

The feasibility studies will identify the efficiency of the ditches, as well as determine the size and type of pipe to be used at each location. Engineering, permitting and construction cost estimates will also be provided.

The benefit of the project would be the identification of potential water savings that could be realized by improvements to the ditch systems. Once the potential water savings are identified and quantified, future funding could be pursued to make improvements to these systems in order to increase flows in Cow Creek and its tributaries for fisheries/water quality benefits.

The Cow Creek Watershed Assessment increased landowner awareness of environmental issues in the Watershed. There is significant landowner momentum to complete initial projects.





DETAIL

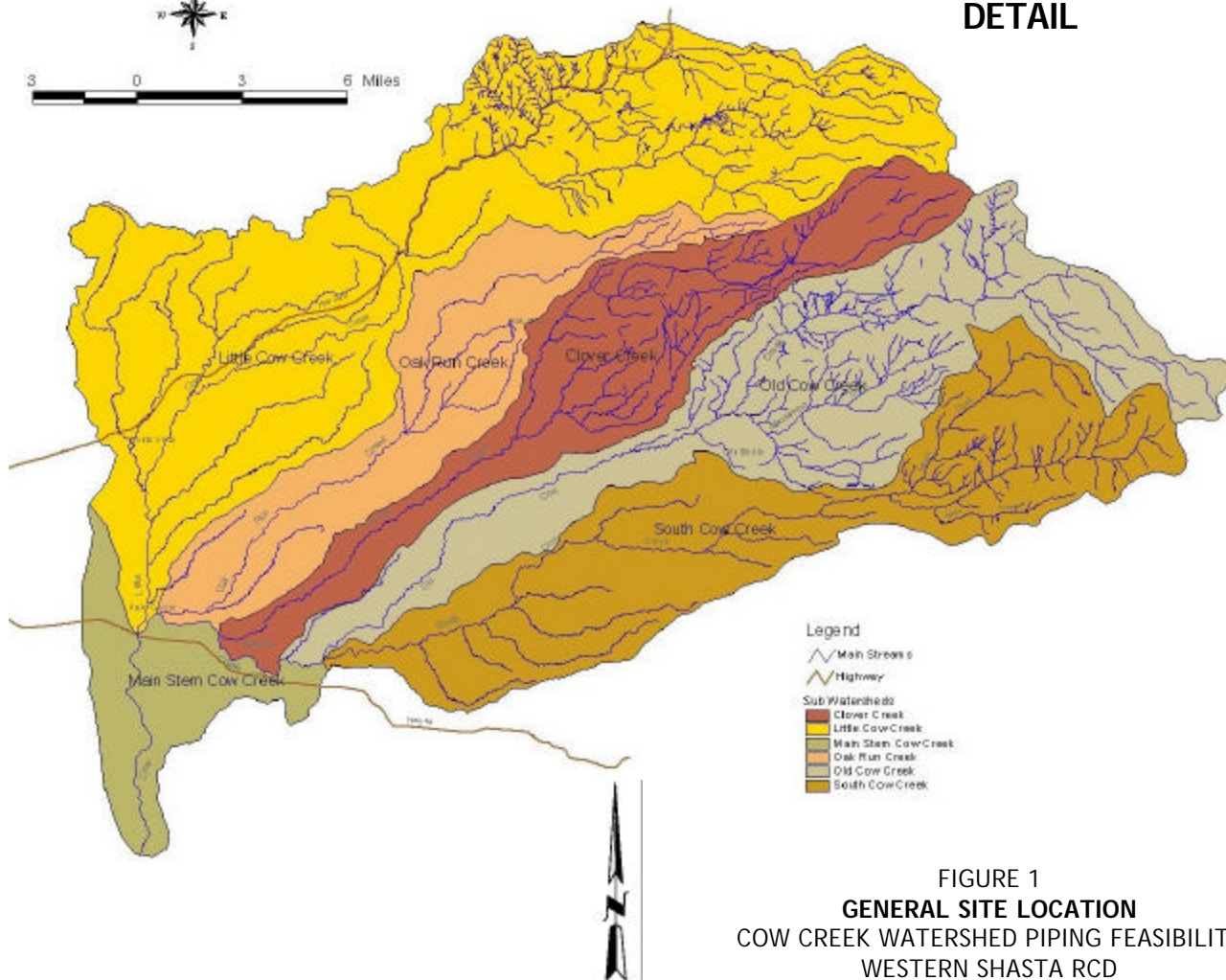


FIGURE 1
GENERAL SITE LOCATION
 COW CREEK WATERSHED PIPING FEASIBILITY
 WESTERN SHASTA RCD
 SHASTA COUNTY, CALIFORNIA

SECTION A

Scope of Work: Relevance and Importance

The project involves conducting feasibility studies for piping several agricultural ditch irrigation systems within the Cow Creek Watershed. The benefit of the project would be the identification of potential water savings that could be realized by improvements to the historic ditch systems. Once the potential water savings are identified and quantified, future funding will be pursued to make improvements to these systems in order to increase flows in Cow Creek for fisheries/water quality benefits.

The ditch systems are located on Little Cow Creek, Oak Run Creek, Clover Creek, Old Cow Creek and South Cow Creek and range in capacities from approximately 2 cfs to 28 cfs and range in length from approximately 1 mile to 7.5 miles. Preliminary estimates indicate that some of the irrigation ditch losses may be over 50%. Descriptions of each of the ditches are as follows:

- *Predmore Ditch* – The Predmore Ditch is located on Oak Run Creek approximately 18.5 miles upstream of the confluence with Cow Creek. The current allotment for the ditch is 2.15 cfs. The ditch is approximately 2 miles in length. Currently the allotment is split into two points of diversion, with 0.35 cfs irrigating the north side of Oak Run Creek, through a separate ditch, and 1.80 cfs irrigating the south side of Oak Run Creek.
- *Bassett Ditch* – The Bassett Ditch is located on Old Cow Creek approximately 10 miles upstream of the confluence with Cow Creek. The current allotment for the ditch is 27.61 cfs. The Bassett Ditch is approximately 7.5 miles in length and is located on the north side of Old Cow Creek.
- *Parker/Hufford Ditch* – The Parker/Hufford Ditch is located on Old Cow Creek approximately 12 miles upstream of the confluence with Cow Creek. The current allotment is 11.12 cfs. The ditch is approximately 5 miles in length and is located on the south side of Old Cow Creek. The ditch crosses Whitmore Road and a seasonal tributary to Old Cow Creek approximately 1 mile from the diversion. Several sections of the ditch are currently piped, where terrain does not allow an open ditch or geologic instability has resulted in problems in the past.
- *Abbott Ditch* – The Abbott Ditch is located on South Cow Creek approximately 6.5 miles upstream of the confluence with Cow Creek. The current allotment is 13.16 cfs. The diversion is located in the tailwater channel of the PG&E South Cow Creek Hydroelectric Plant. The ditch is approximately 3.5 miles long and traverses property along the south side of the creek and crosses South Cow Creek Road several times.
- *Guttman Ditch* – The Guttman Ditch is located on Clover Creek approximately 25.5 miles upstream of the confluence with Cow Creek. The current allotment is 1.85 cfs. The Guttman Ditch is approximately 2.5 miles in length and is located south of Clover Creek.
- *Pearson/Grant/Strawn Ditch* – The Pearson/Grant/Strawn Ditch is located on Little (North) Cow Creek. The current allotment is 2.6 cfs, however, the ditch users are currently arranging to lease an additional 0.73 cfs that will be transported through the ditch. The ditch is approximately 4 miles in length.

The feasibility study reports for each ditch will include a determination of losses through the ditch, pipe sizing for the system, an identification of possible irrigation alternatives, such as conversion from flood to sprinkler, (Parker/Hufford Ditch, Bassett Ditch and Pearson/Grant/Strawn Ditch), determination of the permits required for construction and a cost estimate including engineering, permitting and construction costs.

The Cow Creek Watershed Assessment prepared in 2001 by the Western Shasta Resource Conservation District and the Cow Creek Watershed Management Group, identified inadequate flows in Cow Creek tributaries as related to declines in fisheries and water quality resources. Action options identified in the Watershed Assessment included:

- Evaluate water conservation measures for existing diversions to increase stream flows.
- Pursue grant funding or cost-share payments for landowners to inventory, prepare plans and implement best-management practices that reduce water quality impacts.
- Investigate measures to increase flows in Cow Creek and tributaries, such as investigating opportunities to increase irrigation efficiency.
- Determine how to improve water conditions for fish and other riparian obligate species.

The Cow Creek Watershed Assessment identified potential problem areas with the Cow Creek system relating to water quality, temperature, and low water flows. The Cow Creek system supports anadromous fisheries that are potentially impacted by these problems. Performing feasibility studies for piping of irrigation ditches, it is the first step in addressing the issues presented in the Watershed Assessment document. These issues are also a priority of the California Department of Fish and Game (DFG) and Regional Water Quality Control Board (RWQCB). This project is important, as it will serve as a pilot project, from which the other ditch users and watershed members can see the potential benefits of piping the historic irrigation ditches. Once the benefits are seen from the feasibility study documents, others would also likely proceed with studies on their ditches. Following the preparation of feasibility studies, the piping projects can be implemented and the benefits to the Cow Creek system will begin to be realized.



The proposed feasibility studies meet these objectives of the Cow Creek Watershed Assessment.

The feasibility studies for piping existing irrigation ditches meet the primary objectives of the Calfed Bay-Delta Program including ecosystem quality, water supply, and water quality.

Ecosystem Quality - Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.

Performing feasibility studies to pipe existing irrigation ditches would determine the efficiency of the existing ditch systems and determine whether water savings could be accomplished and the potential for those water savings to increase in-stream flows. Increased stream flows could potentially improve the aquatic habitat (flow and quality) of Cow Creek in areas that support at-risk and economically important anadromous fish species.

Water Supply - *Reduce the mismatch between Bay-Delta water supplies and the current and projected beneficial uses dependent on the Bay-Delta system.*

Performing feasibility studies to pipe existing irrigation ditches would determine the efficiency of the existing ditch system and determine whether water savings could be accomplished and the potential for those water savings to be applied to the respective creek, thereby keeping more water in the creek for downstream use. The feasibility study will also determine to what extent seasonal tributaries are being captured by the existing ditch systems, and the amount of water that could potentially be used to augment stream flows if the ditches are piped.

Water Quality - *Provide good water quality for all beneficial users.*

Performing feasibility studies to pipe existing irrigation ditches would determine the efficiency of the existing ditch systems and determine whether water savings could be accomplished and the potential for those water savings to increase in-stream flows. Water quality should improve by piping and increasing the stream flows.



SECTION B

Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring and Assessment

The feasibility studies will include the following:

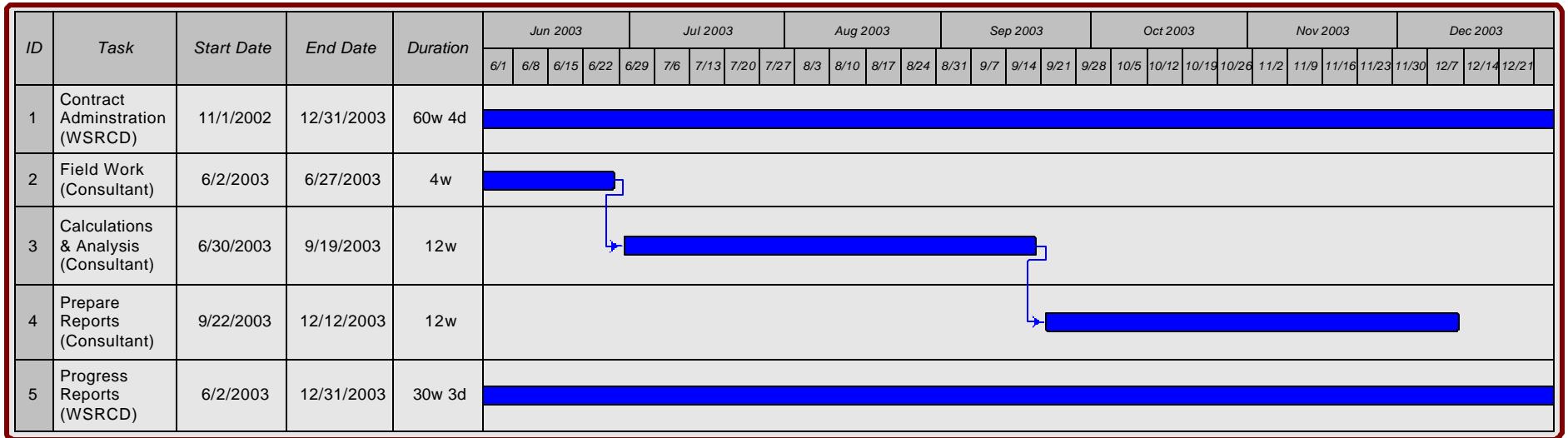
- A limited topographic survey of portions of the ditch to determine the overall slope.
- Hydraulic analysis of the existing and proposed systems based on size and slope of ditch, type of pipe to be used, current amount of water being diverted and total allotment.
- A field verification of the condition on the existing ditch, including any problem areas that may require additional engineering.
- A measurement of the amount of water loss during transport and through loss from vegetation to determine water savings by piping the system.
- Determine possible water saving alternatives for irrigating, such as sprinklers vs flood irrigation, where conditions allow and systems have not already been established (Parker/Hufford Ditch, Bassett Ditch and Pearson/Grant/Strawn Ditch).
- Determination of the permits required for construction.
- A cost estimate including engineering, permitting and construction costs.

Table 1 Project Task List (Consultant)				
Task		Work to be completed within task	Cost Estimate	Duration
1.	Field Work	<ul style="list-style-type: none"> • Walk ditch to identify problem areas. • Perform limited topographic survey to determine slope and size of existing ditch. • Conduct flow measurements to evaluate losses. 	12,150	4 weeks
2.	Calculations and Analysis	<ul style="list-style-type: none"> • Hydraulic analysis, including pipe sizing and material. • Determine ditch water losses due to infiltration and evaporation. • Determine potential water savings. • Investigate possible irrigation alternatives (Parker/Hufford, Bassett, Pearson/Grant/Strawn) • Determine permits necessary for construction. • Obtain costs for construction. 	24,840	12 weeks
3.	Prepare Final Reports	<ul style="list-style-type: none"> • Prepare final report for each ditch separately. • Include piping alternatives • Include potential water savings. • Include necessary permits. • Include cost estimate for engineering, permitting, and construction. 	34,604	12 weeks

Table 2
Project Administration Task List (WSRCD)

Task		Work to be completed within task	Cost Estimate	Duration
1.	Contract Administration	<ul style="list-style-type: none"> Obtain and execute contract with funding agency. Quarterly reports. Accounting and invoicing. 	3,318	13 months
2.	Project Coordination	<ul style="list-style-type: none"> Organize meetings with Consultant and Cow Creek Watershed Management Group. Site visits. Checkpoint meetings. 	3,318	13 months

SCHEDULE



Note: Schedule begins approximately November 2002, but graph shows schedule from start of consultants work.

SECTION C

Qualifications of the Applicants and Cooperators

Mary Schroeder

District Manager, WSRCD

Ms. Schroeder received a B.S. degree in Forest Industries Management from The Ohio State University, Columbus, Ohio. She has over 20-years business management experience in natural resource and wood products industries. This includes negotiating over \$30 million/year in contracts for the pulp and paper industry and \$12 million/year in contracts for wood-fired power plant operations. Ms. Schroeder's specialty is contract negotiations, financial management, grant writing and grant management, including two previous CALFED grants. She is a leader in working with local groups collaborating on natural resource issues. As chief administrative officer of the District (which is grant funded with a budget over \$1 million/year), Ms. Schroeder is responsible for managing and directing the District's business and field operations consistent with the strategic plan.

Ter Pechar

Watershed Coordinator, WSRCD

Ter Pechar, Watershed Coordinator, received a B.S. in Environmental Science and Geology from State University of New York at Plattsburgh. Ter spent almost three years working with the USDA-Natural Resources Conservation Service on wetland restoration, nutrient management and wildlife habitat restoration projects throughout two counties of Northeastern New York. She is currently responsible for coordinating watershed group activities in the Cow Creek watershed, Lower Clear Creek watershed, and Bear Creek watershed.

Cooperator

The Cow Creek Watershed Management Group was formed in 2000 as a 501C3 group, representing landowners and residents within the 275,000-acre watershed. The group has over 100 members and a 15-member board, who are very active in natural resources issues. The mission of the group is to "use the resources in the watershed to meet the needs of today without infringing on the need of future generations." A watershed assessment was completed in December 2001.

Consultant

A qualified consultant will be chosen by the Western Shasta RCD and the Cow Creek Watershed Management Group, using the district's established selection procedures.

SECTION D
Benefits and Costs

Table 3 Project Labor & Costs				
Labor	Days		Daily Rate	Total
WSRCD District Manager	10		\$ 200.00	\$ 2,000.00
Benefits @ 30%				\$ 600.00
WSRCD Watershed Coordinator	10		\$ 200.00	\$ 2,000.00
Benefits @ 30%				\$ 600.00
WSRCD Secretary	10		\$ 72.00	\$ 720.00
Benefits @ 30%				\$ 216.00
Total Labor				\$ 6,136.00
Equipment, Materials & Supplies	Quantity	Unit	Rate	Total
Printing, photocopying, etc.				\$ 500.00
Total Equipment, Materials & Supplies				\$ 500.00
Operating Expenses	Quantity	Unit	Rate	Total
Mileage	0	miles	\$ 0.32	\$ -
Travel Expenses (per diem)	0	days	\$ 75.00	\$ -
Professional Services (Consultant.)				\$ 71,593.25
Total Operating Expenses				\$ 71,593.25
SUBTOTAL				\$ 78,229.25
WSRCD Indirect Costs @ 15%				\$ 11,734.39
TOTAL PROJECT COST				\$ 89,963.64

Table 4 Consultant Labor & Costs				
Labor	Days		Daily Rate	Total
Project Manager (fully loaded)	6		\$ 840.00	\$ 5,040.00
Professional Engineer (fully loaded)	48		\$ 720.00	\$ 34,560.00
Hydrologist (fully loaded)	12		\$ 720.00	\$ 8,640.00
Clerical (fully loaded)	5		\$ 440.00	\$ 2,200.00
Survey Crew (2) (fully loaded)	8.5		\$ 1,200.00	\$ 10,200.00
Total Labor				\$ 60,640.00
Equipment, Materials & Supplies	Quantity	Unit	Rate	Total
Printing, photocopying, etc.				\$ 1,000.00
Miscellaneous Materials & Supplies				\$ 250.00
Total Equipment, Materials & Supplies				\$ 1,250.00
Operating Expenses	Quantity	Unit	Rate	Total
Mileage	1000	miles	\$ 0.37	\$ 365.00
Travel Expenses (per diem)	0	days	\$ 75.00	\$ -
Total Operating Expenses				\$ 365.00
SUBTOTAL				\$ 62,255.00
Contingency (15%)				\$ 9,338.25
TOTAL PROFESSIONAL SERVICES				\$ 71,593.25

Potential Benefits

The proposed feasibility studies will provide information about the efficiency of six existing water diversion conveyance systems in the Cow Creek Watershed and the potential for capital improvements that will improve water use efficiency. This is the next critical step, following the recently completed Watershed Assessment, in order to move forward with projects that could provide benefits to aquatic habitats in Cow Creek and help meet CALFED objectives. If determined to be feasible, the potential projects will contribute to the following benefits outlined in the 2002 Consolidated Water Use Efficiency Proposal Solicitation Package:

- Improving Water Use Efficiency

The proposed studies could potentially lead to projects that will improve water use efficiency by decreasing water losses in currently unlined conveyance systems.

- Increasing Water Supply

The proposed feasibility studies could potentially lead to projects that will increase water supply in the Sacramento River.

- Improving Water Quality

The proposed feasibility studies could potentially lead to projects that will improve water quality by increasing in-stream flows in Cow Creek. Potential water quality improvements include decreases in water temperatures, increases in dissolved oxygen, and dilution of nutrients and bacteria.

- Providing Environmental Benefits

The proposed feasibility studies could potentially lead to projects that will improve aquatic habitat for salmon and steelhead and other aquatic species through increases in stream flows in Cow Creek and its tributaries.

CALFED Quantifiable Objectives

The proposed feasibility studies could potentially lead to projects that would be consistent with CALFED Targeted Benefits # 5 (Provide flow to improve aquatic ecosystem conditions in Cow Creek) and # 6 (Provide flow to improve aquatic ecosystem conditions in the Sacramento River below Keswick Dam) identified in Table A.1.1 of the Draft Details of Quantifiable Objectives paper. The paper identifies the reduction in canal seepage through canal lining or piping as a possible action for Targeted Benefit # 6.

Benefit Realized and Information Gained versus Costs

It is difficult to conduct a direct comparison of the benefits vs. the costs of this project due to the fact that most of the benefits potentially realized by these feasibility studies such as improvements to water quality and aquatic habitats are not easily quantifiable. Any potential benefits that could be quantified such as increases in downstream water supply cannot be quantified until the feasibility studies are completed.

SECTION E

Outreach, Community Involvement and Acceptance

The Cow Creek Watershed Assessment prepared by the Western Shasta Resource Conservation District and the Cow Creek Watershed Management Group has identified several action options, which include evaluating water conservation measures, determining how to improve habitat conditions for fish and riparian species, investigating measures to increase flows in Cow Creek and its tributaries, and investigating opportunities to increase irrigation efficiency. The Cow Creek Watershed Management Group is looking for funding sources for projects that have been identified in the action options of the Watershed Assessment.

The feasibility studies on six ditches within the watershed address the issues set out in the Watershed Assessment. These studies will provide the first step in carrying out the action options identified in the Watershed Assessment and will serve as a pilot project for the Cow Creek Watershed Management Group.

The findings from the feasibility studies will be presented at a Cow Creek Watershed Management Group meeting. This will allow the other ditch users within the watershed to see the benefits of having feasibility studies conducted on their ditches to determine their efficiency. The group will then be able to seek funding for additional feasibility studies for additional ditches within the watershed and for implementation of the piping projects.

The project involvement is limited to the Cow Creek Watershed, as the potential impacts will be to the creeks within the watershed. The Cow Creek Watershed Management Group Board of Directors is currently aware of and in support of the project. The Watershed Assessment increased landowner awareness of environmental issues in the Watershed. There is significant momentum to complete initial projects. The issue of piping irrigation ditches, as well as other potential action items identified in the Watershed Assessment is going to be the topic of the Watershed Management Group meeting in March, 2002. If the project is funded, periodic updates of how the project is progressing will be presented at each Watershed Management Group monthly meeting and a final presentation will be given at the completion of the project.

In addition to the ditch users identified in this pilot project, several other landowners within the watershed that use open irrigation ditches have voiced support of the project, as well as also wanting to pursue piping options for their ditches. As this project has the future potential to benefit the local creeks, it is expected that opposition will be minimal. Local opposition may come from landowners through which the ditches cross their property, but do not have an adjudicated right to the water. They may see that they will be losing the access and use of the water. However, to date no such opposition has been noted.

The potential for third party impacts while conducting the feasibility studies is virtually non-existent. There is potential for impact during construction of the piping projects to landowners where the ditches cross their property. Mitigation measures will be included in the design and construction of the projects to minimize disturbance to non-user owned property.

The only economic benefit of the project currently will be the ditch users and the Watershed Group. The benefit will be the actual cost of the feasibility studies themselves. As these are not construction projects, there will be no cost benefits over time associated with this project.